

Stereoscopic Studies of ANATOMY

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Section IX

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Stereoscopic Studies of Anatomy

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VERTICAL TRANSVERSE BILATERAL, SECTION No. 1

Anterior view of a vertical transverse bilateral section of the head, through the anterior portion of the orbit, the maxillary sinus, and the first molar teeth, dividing the eye just in front of the crystalline lens. In the upper portion of the nasal cavities are seen the middle ethmoidal cells. About the centre of the floor of the orbit and the roof of the sinus, which is very thin in this case, will be found the infraorbital canal as commonly described, and below in the nearly pyramidal cavity of the maxillary sinus, a partial septum crossing transversely from the inner to the outer wall.

In the lower angle of the left sinus can be seen the anterior buccal root of the second molar, and on the inner wall a portion of the palatal root of the first molar. The palatal root of the right first molar is easily seen passing well up in the inner walls of the sinus. The septum in the centre is unusually straight.

On each side of the septum, at the upper attachment, is the roof of the nasal chamber. Running down on either side a little distance from this are the middle turbinate bones, the scroll-shaped bones below, and, hanging from the outer wall, the inferior turbinates. The superior turbinates cannot be seen in a section cut in this region, as they are situated further back in the skull. For further description see diagram.

The figures indicate—

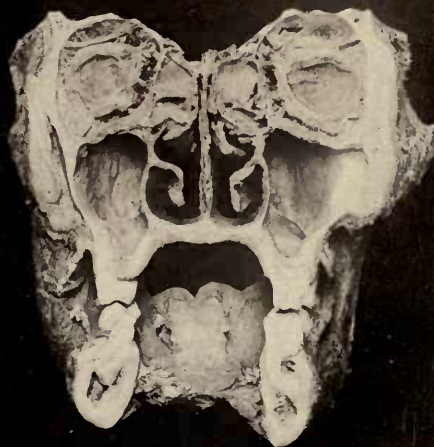


- 1—Anterior Ethmoidal Cells
- 2—Hiatus Semilunaris
- 3—Unciform Process
- 4—Middle Turbinate Bone
- 5—Inferior Turbinate Bone
- 6—Maxillary Sinus
- 7—Incomplete Septum
- 8—Vestibule of the Mouth
- 9—Inferior Dental Nerve

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VERTICAL TRANSVERSE BILATERAL SECTION AS SHOWN IN Nos. 1 AND 2

Posterior view. At the anterior superior angle of the antrum is seen a cord marking the passage, ostium maxillare, from the antrum into the hiatus semilunaris. In the floor will be seen the septum referred to in the description of No. 1, and on the left side the palatal and anterior buccal roots of the first molar teeth in the walls of the antrum. The position of these roots, as shown here and in No. 1, are very interesting to students of the diseases of the antrum, as teeth of this character sometimes cause infection of the maxillary sinus, whence it is transmitted to the other pneumatic spaces of the face.

In the majority of the skulls of the white race examined, roots of the molar teeth are found in the walls of the antrum, covered at the point, where they approach the surface, by only a thin conical shell of bone.

The figures indicate—



- 1—Brain Case
- 2—Crista Galli
- 3—Frontal Sinus
- 4—Bulla Ethmoidalis
- 5—Middle Turbinate Bone
- 6—Hiatus Semilunaris
- 7—Unciform Process
- 8—String through Ostium Maxillare
- 9—Maxillary Sinus

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VERTICAL TRANSVERSE BILATERAL SECTION AS SHOWN IN Nos. 1 AND 2, No. 3

This is a section similar in character to those shown in Nos. 1 and 2 from a negro skull. It shows the greater thickness of the floor of the maxillary sinus, common in the negro race. The roots of the teeth usually do not extend into the walls of the sinuses, therefore do not have the same relation to the antrum as those of the white race. As a rule, the teeth of the negro are not so liable to be a factor in diseases of the pneumatic spaces of the face as those of the Caucasian race.

The figures indicate—



- 1—Brain Case
- 2—Frontal Sinus
- 3—Crista Galli
- 4—Orbit
- 5—Hiatus Semilunaris
- 6—Unciform Process
- 7—Maxillary Sinus
- 8—Inferior Turbinated Bone
- 9—Nasal Septum

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VERTICAL TRANSVERSE BILATERAL SECTION No. 4

Posterior view. It exhibits an entire lack of symmetry between the nasal fossae and sinuses of the right and left sides. The inferior meatus of the right side is closed anteriorly by the deflected nasal septum and the "spur" upon it. In such cases as this inspissated mucous often collects and the outlet of the lachrymal duct may be interfered with. It also forms a nucleus for infectious matter and may be the cause of necrosis of this region.

The figures indicate—



- 1—Brain Case
- 2—Crista Galli
- 3—Frontal Sinus
- 4—Ethmoidal Cells
- 5—Right Maxillary Sinus
- 6—Spur on Nasal Septum
- 7—Left Maxillary Sinus

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VERTICAL TRANSVERSE BILATERAL SECTION No. 5

Anterior view showing the posterior region of the nasal fossae and the maxillary sinuses. The right sinus is small, similar to that in No. 4. An instrument passed vertically through the axis of the alveolar process would perforate the nasal fossa instead of the floor of the antrum. The floor of the maxillary sinus extends downward until it is on a level with the uvula.

The figures indicate—

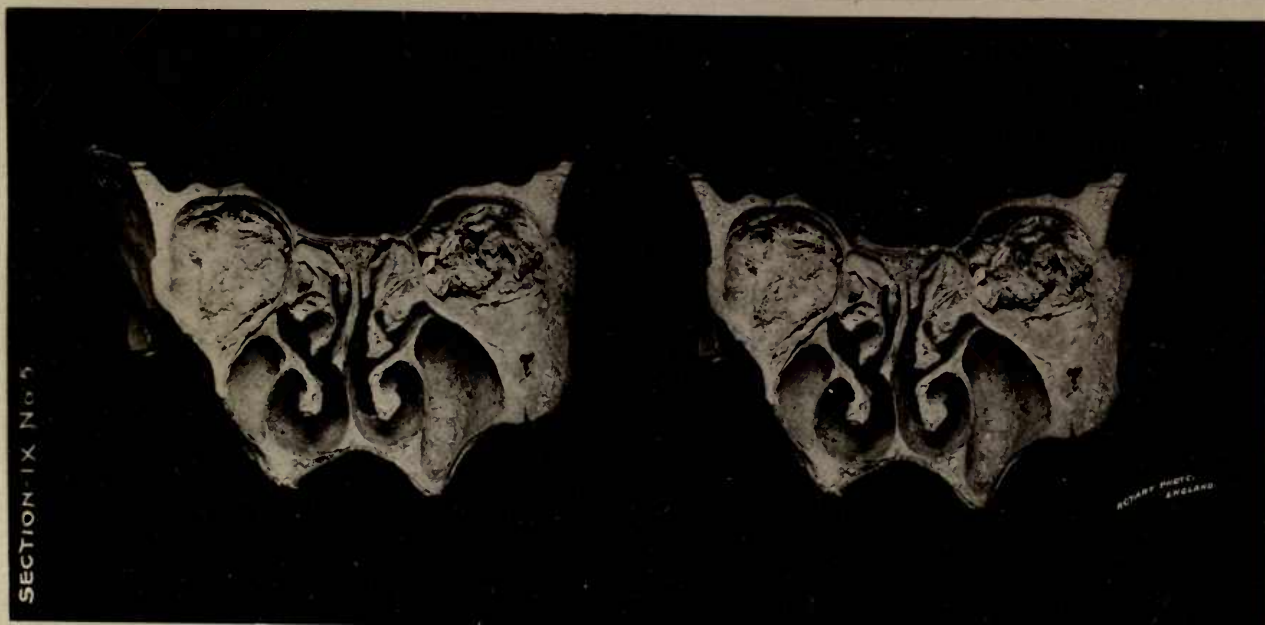


- 1—Superior Turbinate Bone
- 2—Ethmoidal Cells
- 3—Middle Turbinate Bone
- 4—Deflected Nasal Septum
- 5—Maxillary Sinus
- 6—Inferior Turbinate Bone

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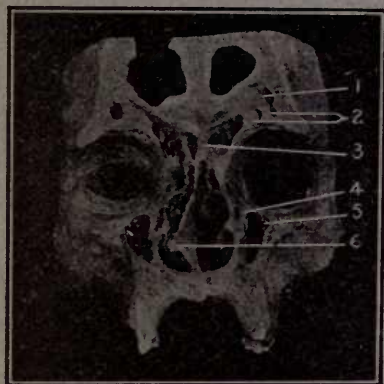
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VERTICAL TRANSVERSE BILATERAL, SECTION No. 6

Anterior view of a vertical transverse bilateral section in the region of the premolar teeth and exposing the frontal sinuses. It shows a septum deflected to the right, displacing a portion of the inferior turbinate. The frontal sinuses extend down below the middle of the orbit, and come into close juxtaposition with the lachrymal duct. Between them there is an inter-frontal cell extending backward into the crista galli.

The figures indicate—



- 1—Frontal Sinus
- 2—Incomplete Septa
- 3— } Opening Leading into Cell of The
Crista Galli
- 4—Lachrymal Duct
- 5—Maxillary Sinus
- 6—Deflected Nasal Septum with Spur

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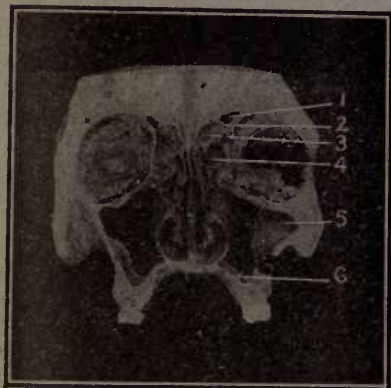


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VERTICAL TRANSVERSE BILATERAL SECTION No. 7

Posterior view of a section cut back of the first molar teeth. The maxillary sinuses are almost cuboidal in shape and extend down below the floor of the nasal fossae, inward toward the median line, outward to the molar bones, and upward to the ethmoidal cells. The inner walls are not so straight as those shown in pictures of typical skulls. Starting at the floor of the antrum, almost over the center of the dome of the mouth, the inner wall as it extends upward curves outwardly, then inwardly to the point at which the inferior turbinate projects into the nasal chamber. This formation leaves a very narrow or contracted nasal cavity.

The figures indicate—



- 1—Frontal Sinus
- 2—Septum in Frontal Sinus
- 3—Frontal Sinus
- 4—Ethmoidal Sinus
- 5—Maxillary Sinus
- 6—Root of Molar Tooth

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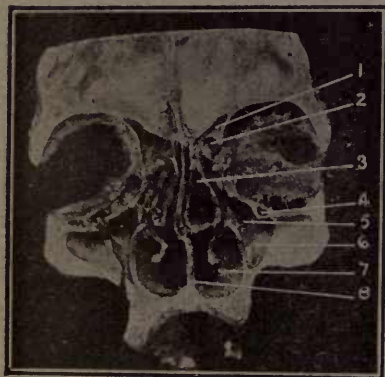


SECTION IX No. 7

VERTICAL TRANSVERSE BILATERAL, SECTION No. 8

A posterior view of a section cut in the region of the second premolar teeth. It shows the posterior and inferior portion of the frontal sinuses. There are two large cells within the middle turbinate bones. The infra-orbital canal of the right side is seen passing through the anterior portion of the maxillary sinus thus forming a deep pocket, the infra-orbital sinus.

The figures indicate—

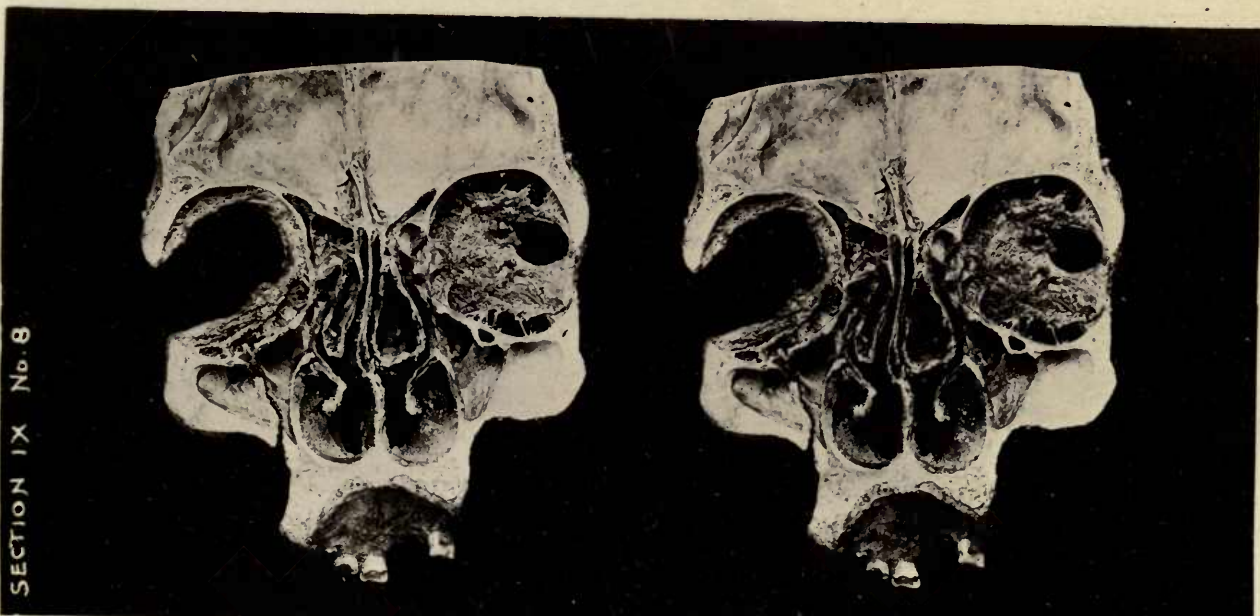


- 1—Frontal Sinus
- 2—Ethmoid Cells
- 3—Large Cell in Middle Turbinate Bone
- 4—Infra Orbital Canal
- 5—Infra Orbital Sinus
- 6—Maxillary Sinus
- 7—Inferior Meatus
- 8—Septum of Nose

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VERTICAL TRANSVERSE BILATERAL, SECTION No. 9

Posterior view of a section posterior to the premolar teeth. On either side a wire has been passed from the two frontal sinuses down through the ostium frontalis into the hiatus semilunaris and thence into the maxillary sinus; the wire on the left side can be seen at various points as it passes downward. This condition indicates direct communication between the frontal and maxillary sinuses, a condition often found. There are also two large cells between the plates of the middle turbinates. In the upper median corner of the maxillary sinus, especially in the left one, is a septum forming an infra-orbital sinus. (See frontal sinus Card No. 98.)

The figures indicate—

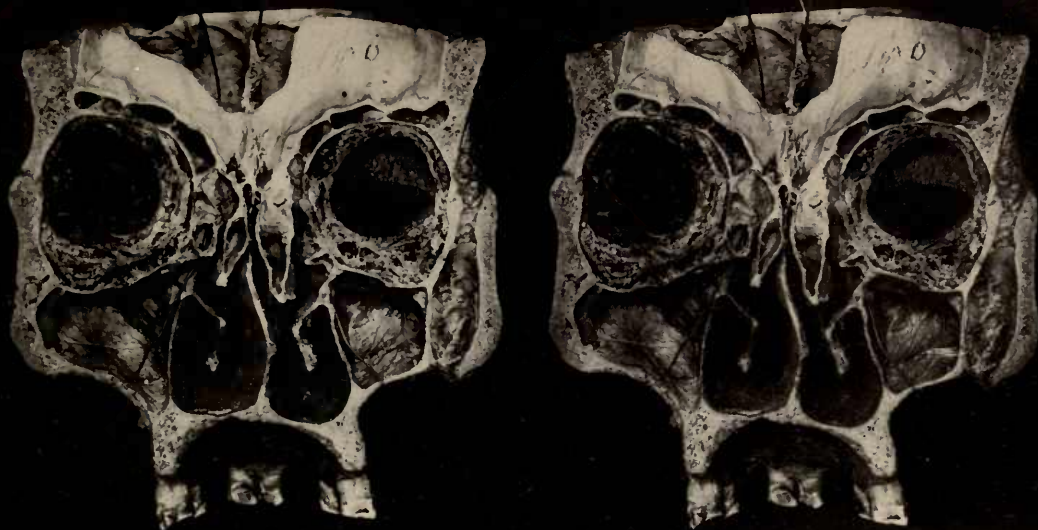


- 1— { Frontal Sinus with Wire Passing Down
to Maxillary Sinus
- 2—Septum of Frontal Sinus
- 3—Frontal Sinus
- 4—Crista Galli with Air Cell
- 5—Cell in Middle Turbinate Bone
- 6—Partial Septum
- 7—Zygomatic Process of Malar Bone
- 8—Maxillary Sinus

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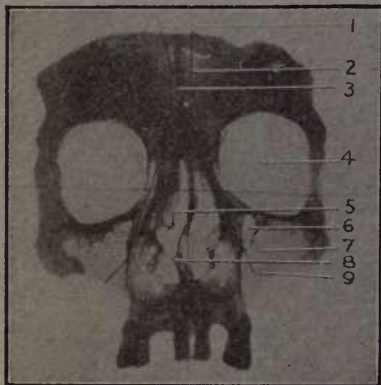
SECTION IX No. 9

VERTICAL TRANSVERSE BILATERAL, SECTION No. 10

RADIOGRAM No. 1

Radiogram of the anterior portion of the face, from the same section as shown in the Vertical Transverse Bilateral, Section No. 9 (which see for further detailed description, see also frontal sinus, Card No. 98), showing two large frontal sinuses. Two wires may be seen through the bone, passing downward through the ostium frontale into the hiatus semilunaris and then into the maxillary sinus. In conjunction with the maxillary sinuses, can be seen the infra-orbital sinuses. The inferior and middle turbinate bones are seen, the latter having a large cell in each. The septum of the nose has a double deflection.

The figures indicate—

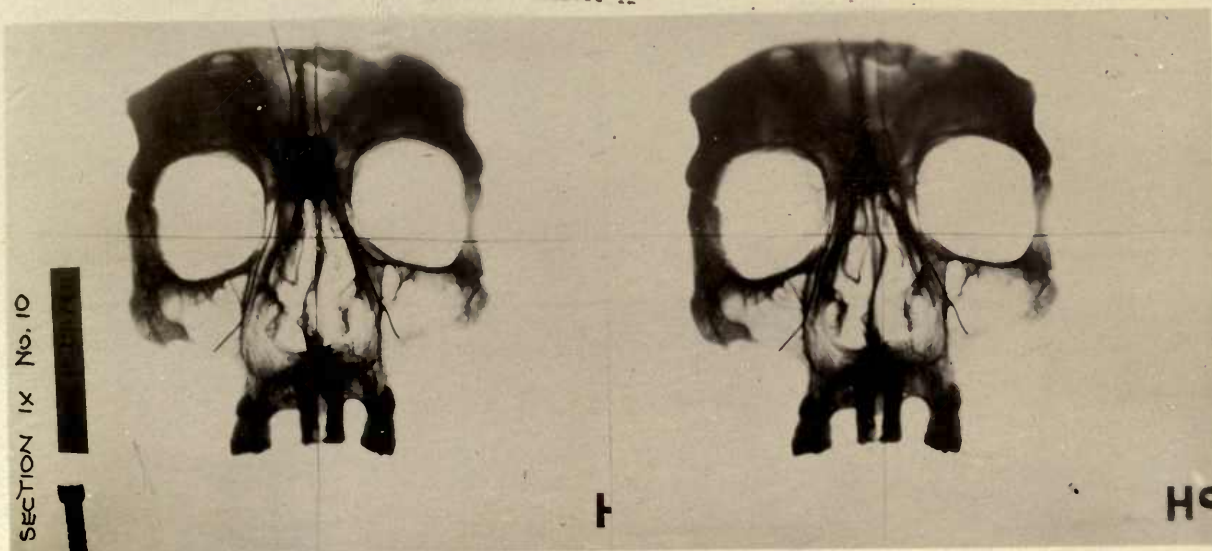


- 1—Wire Passing to the Maxillary Sinus
- 2—Frontal Sinus
- 3—Septum of the Frontal Sinus
- 4—Orbit
- 5—Cell in the Middle Turbinate Bone
- 6—Infra-orbital Sinus
- 7—Maxillary Sinus
- 8—Septum of Nose
- 9— { Wire Passing Upward Through the
Osteum Maxillare, into the Hiatus Semi-
lunaris, thence into the Frontal Sinus.

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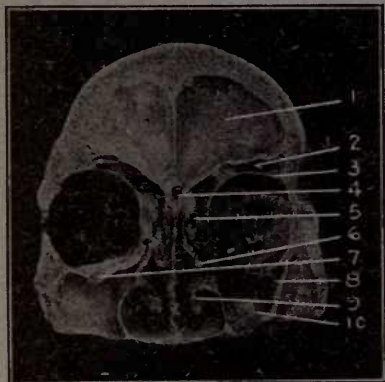
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VERTICAL TRANSVERSE BILATERAL, SECTION No. 11

This section is cut in the region of the premolar teeth from the skull of an aged person. It is a posterior view of the same specimen shown in Frontal Sinus, Card No. 97. The lower portion of the frontal sinus is shown; it extends over the right external angular process. The rims of the orbits are very thin for about $\frac{3}{4}$ of their circumference. The ethmoid cells are well shown. The floor of the maxillary sinus, the nasal fossa and the lower border of the alveolar process are almost on a horizontal line. The left maxillary sinus passes upward until it enters the frontal sinus without any line of demarkation. In the crista galli is seen a cell which extends forward into the frontal sinus.

The figures indicate—

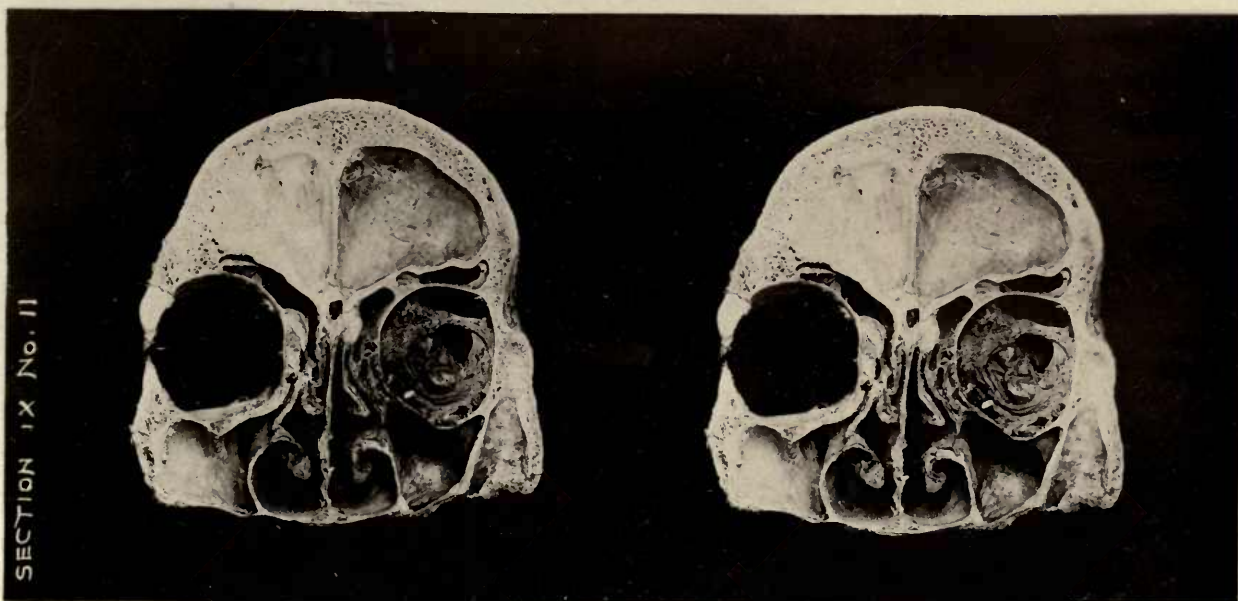


- 1—Brain Case
- 2—Frontal Sinus
- 3—Rim of Orbit
- 4—Cell in Crista Galli
- 5—Ethmoid Cells
- 6—Middle Turbinate Bone
- 7—Infra-orbital Canal
- 8—Partial Septum
- 9—Inferior Turbinate Bone
- 10—Maxillary Sinus

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HORIZONTAL SECTION No. 1

View from beneath of a horizontal section through the upper jaw just above the floor of the nose showing the nasal chamber and the maxillary sinuses. The center is the nasal septum and on each side are seen the edges of the superior and middle turbinate bones with the meati between them; in the roof of the inferior meatus may be seen the outlet of the lachrymal duct. In the left maxillary sinus there are two small osteophytes.

The figures indicate—



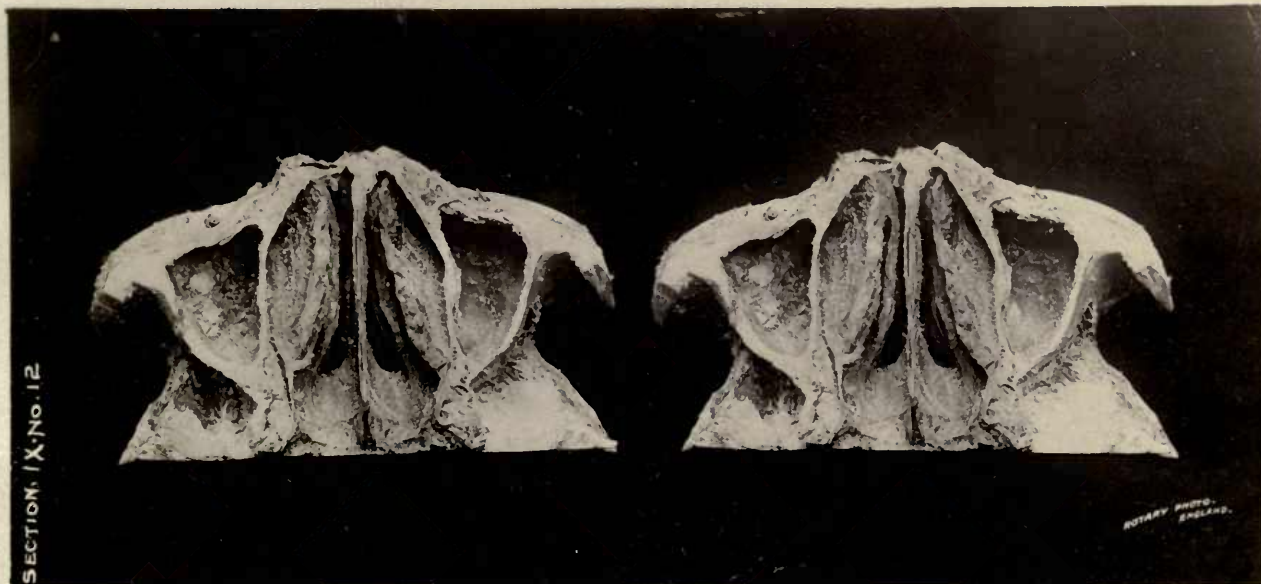
- 1—Anterior End of Nasal Septum
- 2—Nasal Septum
- 3—Infra-orbital Foramen
- 4—Inferior Turbinate Bone
- 5—Middle Turbinate Bone
- 6—Maxillary Sinus

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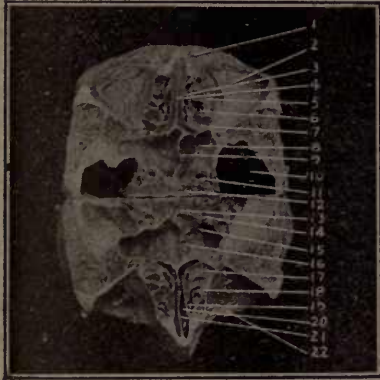
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HORIZONTAL SECTION No. 2

View of a horizontal section cut through the level of the center of the orbits, showing both surfaces of the cut. In the upper picture may be seen the roofs of the orbits, and the roof of the nose, with the septum. Between the septum and the orbits are the ethmoidal cells, and posterior to the nasal chamber, the ethmoidal sinuses, which are larger than the average. Just within the posterior edge of the wall are the internal carotid arteries. This should be remembered in curetting the sinuses. The lower picture shows the corresponding parts from above, looking downward toward the floor of the orbits and the nasal fossa.

The figures indicate—



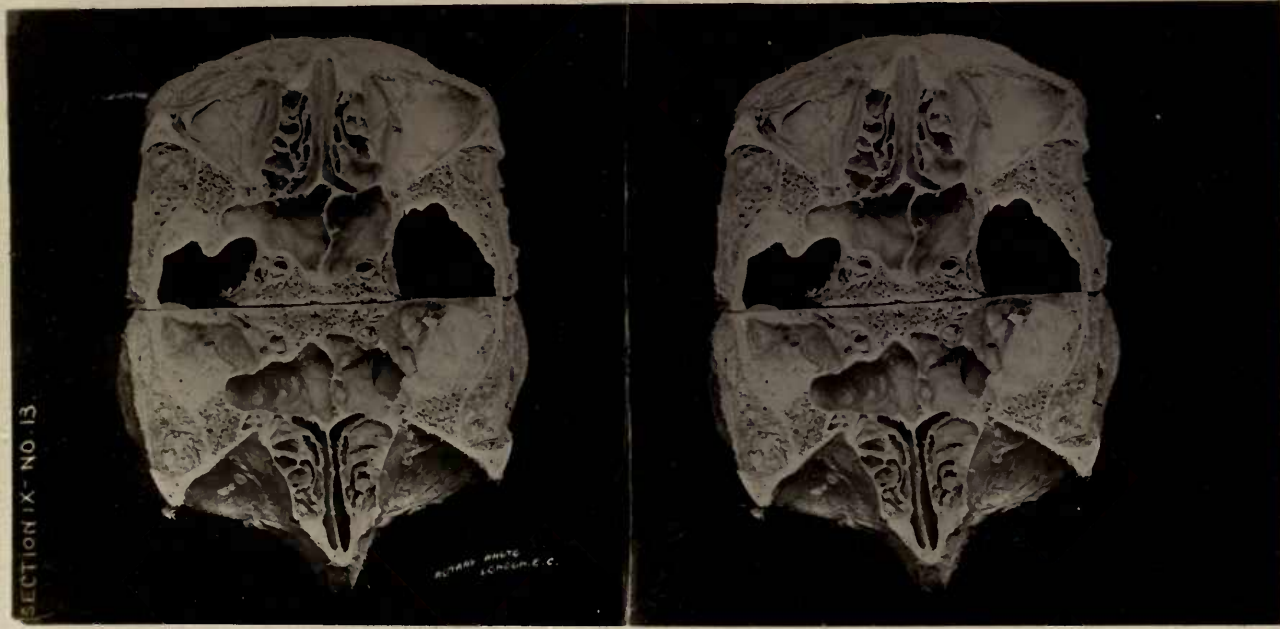
- | | |
|-----------------------------|------------------------------|
| 1—Frontal Bone | 12—Body of Sphenoid Bone |
| 2—Roof of Orbit | 13—Body of Sphenoid Bone |
| 3—Nasal Fossa | 14—Internal Carotid Artery |
| 4—Nasal Septum | 15—Sphenoidal Sinus |
| 5—Anterior Ethmoidal Cells | 16—Septum of Sinus |
| 6—Middle Ethmoidal Cells | 17—Posterior Ethmoidal Cells |
| 7—Posterior Ethmoidal Cells | 18—Middle Ethmoidal Cells |
| 8—Sphenoidal Sinus | 19—Anterior Ethmoidal Cells |
| 9—Septum of Sinus | 20—Nasal Fossa |
| 10—Spheno-palatine Fossa | 21—Nasal Septum |
| 11—Internal Carotid Artery | 22—Floor of Orbit |

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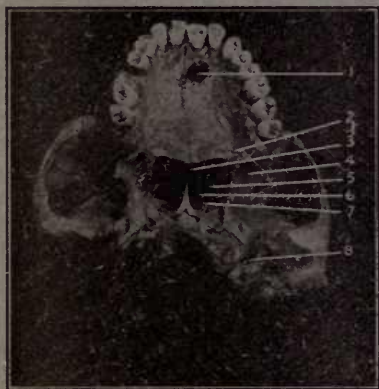
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HORIZONTAL SECTION No. 3

The stereogram from a dried skull shows the roof of the mouth, the occlusal, and lingual surfaces of the teeth, and the posterior portion of the nose, the anatomy of which last is nearly typical. On the left side of the mouth just posterior to the incisor teeth there is a pathological opening caused by a dento-alveolar abscess. This opening extends through the bone and the alveolar process to the anterior or facial surface of the bone.

The figures indicate—

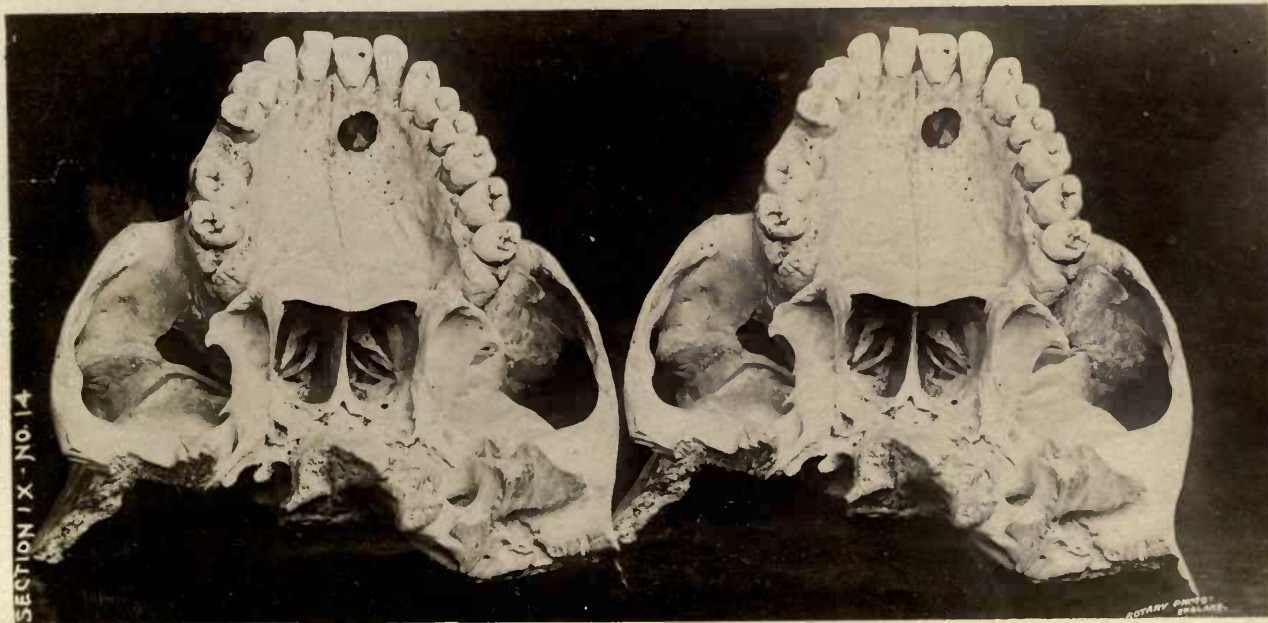


- 1—Necrotic Opening
- 2—Posterior Palatine Canal
- 3—Nasal Septum
- 4—Pterygoid Fossa
- 5—Inferior Turbinate Bone
- 6—Middle Turbinate Bone
- 7—Superior Turbinate Bone.
- 8—Foramen Ovale

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SECTION IX - No. 14

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THE NASAL CHAMBER

SAGITTAL SECTION No 1

This section is made by cutting a little to the left of the median line of the face, thus exposing the outer wall of the nasal chamber, a portion of the frontal sinus, and of the anterior ethmoid cells, the turbinate bones, and meati, the orifice of the Eustachian tube, the sphenoidal sinus, the lingual surfaces of the teeth, etc. The sphenoidal sinus is larger than usual. The teeth are in fine occlusion.

The figures indicate—

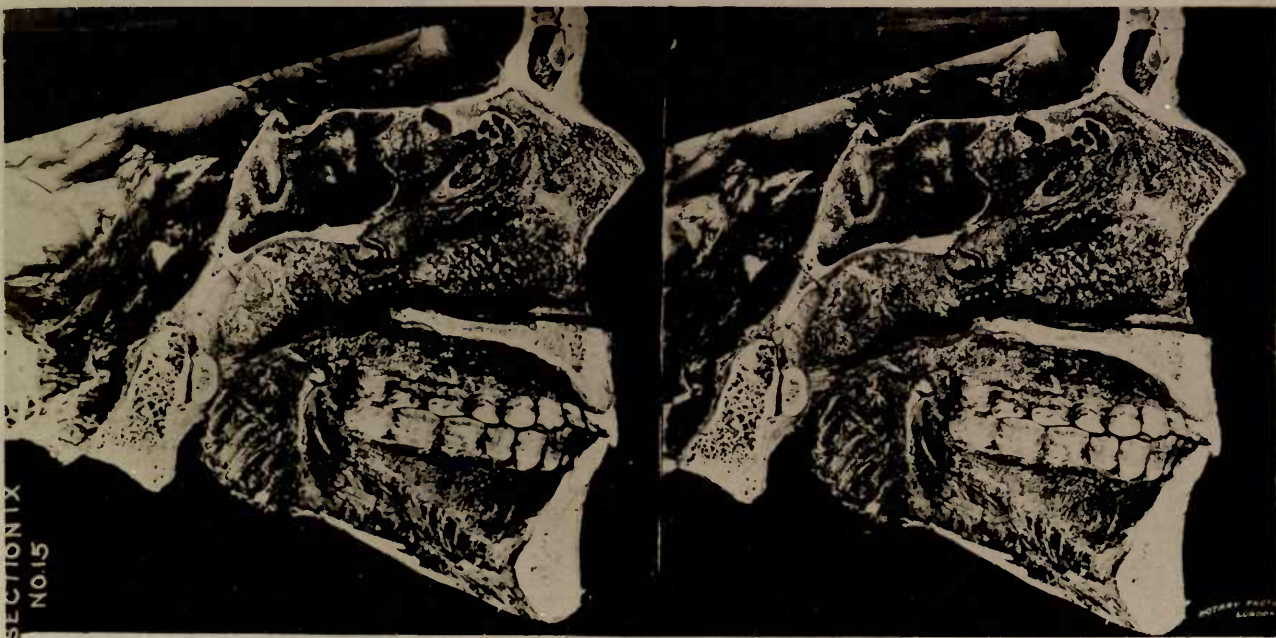
- 1—Frontal Sinus
- 2—Ethmoidal Cells
- 3—Fourth Meatus
- 4—Superior Turbinate Bone
- 5—Middle Turbinate Bone with Air Cell
- 6—Superior Meatus
- 7—Sphenoidal Sinus
- 8—Posterior End of Unciform Process
- 9—Accessor Opening into Maxillary Sinus
- 10—Middle Meatus
- 11—Inferior Turbinate Bone
- 12—Oriface of Eustachian Tube
- 13—Inferior Meatus
- 14—Odontoid Process of Axis
- 15—Atlas
- 16—Teeth in Occlusion



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SECTION IX
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THE NASAL CHAMBER

SAGITTAL SECTION No. 2

Made from two subjects showing great variations in the depth and size of the external walls of the nasal chambers. The upper picture shows four meati, while in the lower there are but three. In some specimens five meati are found. A composite picture of these two will give a fair average of the external wall of the usual nasal chamber.

The figures indicate—



- | | |
|-----------------------------|-------------------------------|
| 1—Left Frontal Sinus | 12—Inferior Meatus |
| 2—Right Frontal Sinus | 13—Frontal Sinus |
| 3—Left Frontal Sinus | 14—Sphenoidal Sinus |
| 4—Left Sphenoidal Sinus | 15—Superior Turbinated Bone |
| 5—Fourth or Supreme Meatus | 16—Superior Meatus |
| 6—Superior Turbinated Bone | 17—Middle Turbinated Bone |
| 7—Superior Meatus | 18—Middle Meatus |
| 8—Right Sphenoidal Sinus | 19—Orifice of Eustachian Tube |
| 9—Middle Turbinated Bone | 20—Inferior Turbinated Bone |
| 10—Middle Meatus | 21—Inferior Meatus |
| 11—Inferior Turbinated Bone | |

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THE NASAL CHAMBER

SAGITTAL SECTION No. 3

This section is cut in the median line showing the external wall of the nasal chamber with a portion of the ethmoid scrolls removed, thus exposing the frontal sinus, the ostium frontale, hiatus semilunaries, the anterior ethmoidal cells, the sphenoidal sinus, the middle and inferior meati, the floor of the nose, the roof of the mouth, the alveolar process and a section of the central incisor tooth. All of these structures in this specimen can be classed as typical or typical anatomy with very slight possibility of becoming diseased except through accident.

The figures indicate—



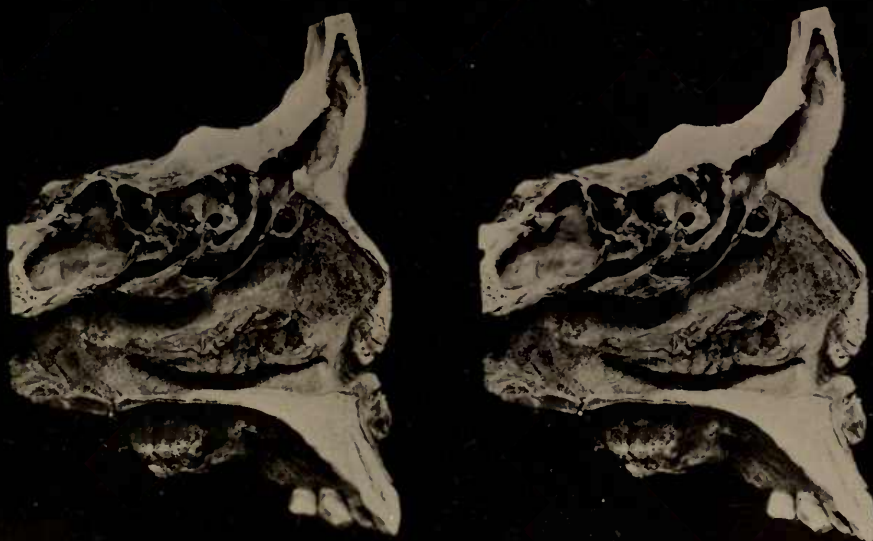
- 1—Frontal Sinus
- 2—Ostium Frontale
- 3—Anterior Ethmoidal Cells
- 4—Bulla Ethmoidalis
- 5—Posterior Ethmoidal Cells
- 6—Hiatus Semilunaris
- 7—Sphenoidal Sinus
- 8—Superior Meatus of Nose
- 9—Middle Turbinated Bone
- 10—Middle Meatus
- 11—Inferior Turbinated Bone
- 12—Inferior Meatus
- 13—Hard Palate

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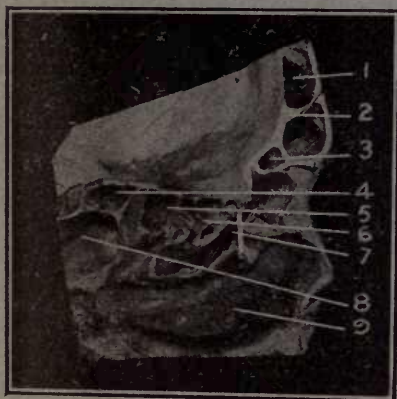
ROTARY PHOTO
ENGLAND.

THE NASAL CHAMBER

SAGITTAL SECTION No. 4

This section shows a great portion of the outer wall of the nasal fossa. A portion of the ethmoid scrolls has been removed, exposing the frontal sinus, from which a wire is passed through the ostium frontale into the hiatus semilunaris. There is a second sinus immediately below the frontal which has a separate outlet into the hiatus in close relation to the outlet of the frontal sinus, through which another wire passes. The posterior ethmoidal cells are unusually large in this specimen. This specimen is not of typical form though some of its variations may be classed as common.

The figures indicate—

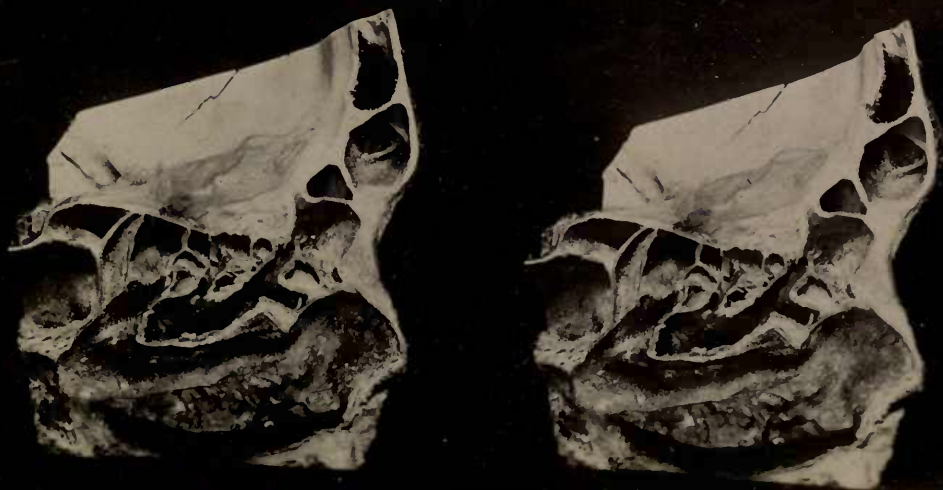


- 1— { Large Frontal Sinus with Wire Passing
Down to Nose
- 2—Imcomplete Septum
- 3— { Small Frontal Sinus Communicating
with Nose
- 4—Posterior Ethmoidal Cells
- 5—Middle Ethmoidal Cells
- 6—Anterior Ethmoidal Cells
- 7—Hiatus Semilunaris
- 8—Sphenoidal Sinus
- 9—Inferior Turbinated Bone

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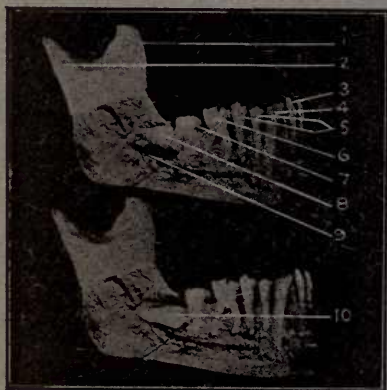
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IMPACTED TEETH No. 1

This Stereogram gives two views of a mandible. The lower picture shows an impacted lower third molar lying horizontally with its occluding surface resting against the posterior root of the second molar tooth. The upper picture shows the tooth removed, making clear that resorption has taken place, exposing the root canal of the second molar, which more than likely caused pain and eventually the devitalization of the pulp. As the roots of the teeth were pressing in the region of the inferior dental nerve it is possible that the function of the nerve was interfered with, which would cause neuralgia.

The figures indicate—

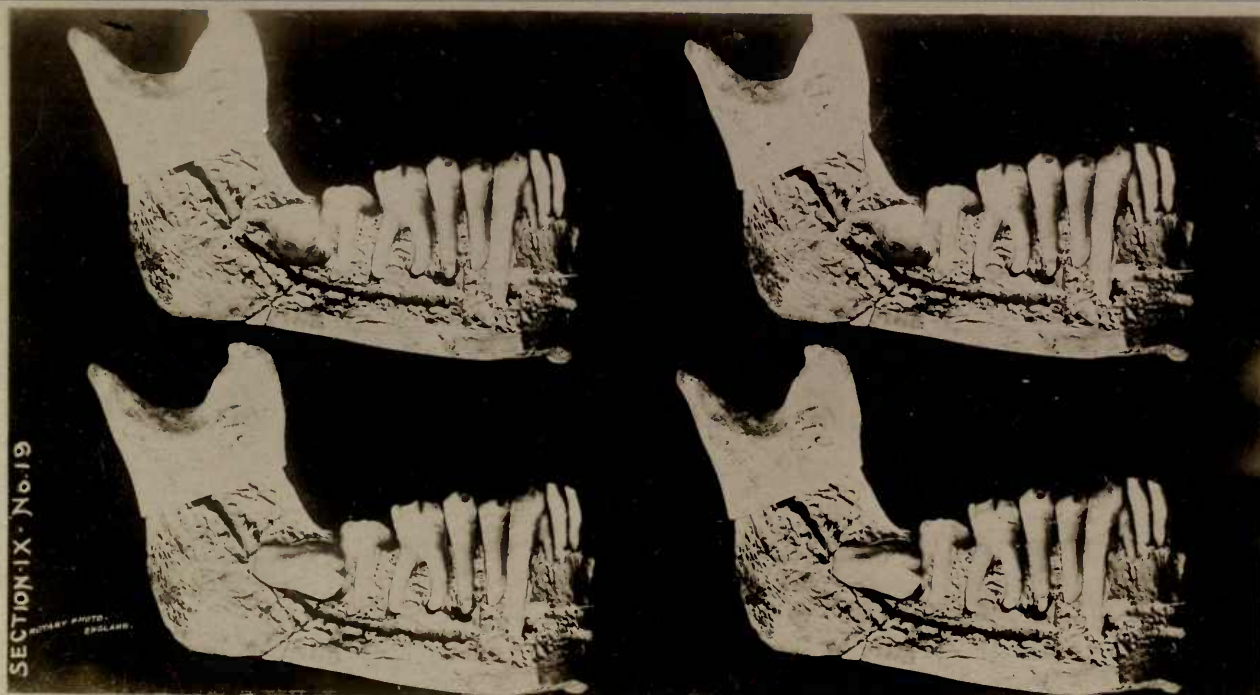


- 1—Coronoid Process
- 2--Condyloid Process
- 3—Incisor Teeth
- 4—Canine Teeth
- 5—Premolar Teeth
- 6—First Molar Teeth
- 7—Second Molar Teeth
- 8—Socket for Impacted Third Molar Tooth
- 9—Inferior Dental Canal
- 10— { Impacted Third Molar Tooth Replaced
in its Socket

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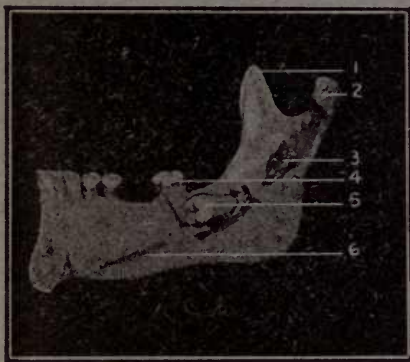
NEW YORK



IMPACTED TEETH No. 2

This Stereogram gives a view of an impacted lower third molar, its position being on the inner side of the jaw, resting immediately upon the inferior dental nerve and vessels. It also rests in close relation to the mylohyoid muscle. In extracting a tooth in such position, great care should be taken not to wound the floor of the mouth or the nerves and vessels which are so closely associated with it.

The figures indicate—



- 1—Coronoid Process
- 2—Condyloid Process
- 3—Inferior Dental Nerve and Vessels
- 4—Second Molar
- 5—Impacted Third Molar
- 6—Submaxillary Fossa

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DEVELOPMENT OF THE EXTERNAL AUDITORY CANAL No. 1

This Stereogram is made from the side view of a skull of an embryo of about seven months. The mandible is suspended in the glenoid fossa, which is flat and shallow. The condyles are round and short. Posterior to the glenoid fossa the auditory ring is well shown, and upon it the tympanic membrane; upon it also the greater portion of the wall of the external auditory canal is built. There is but slight change from these conditions until sometime after birth.

The figures indicate—



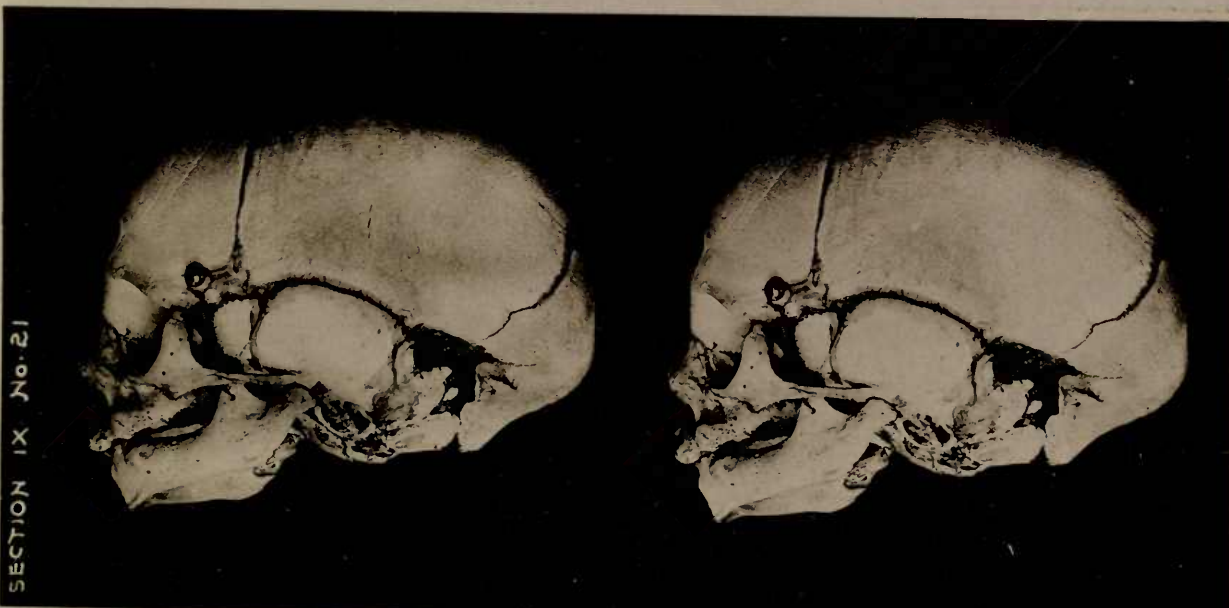
- 1—Frontal Bone
- 2—Coronal Suture
- 3—Parietal Bone
- 4—Lambdoid Suture
- 5—Occipital Bone
- 6—Temporal Bone
- 7—Greater Wing of Sphenoid Bone
- 8—Fontanelle
- 9—Zygoma
- 10—Temporo-Mandibular Articulation
- 11—Auditory Ring
- 12—Mastoid Process

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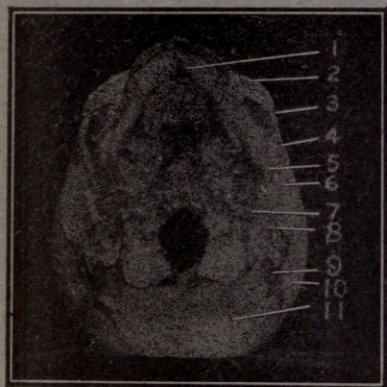
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DEVELOPMENT OF THE EXTERNAL AUDITORY CANAL No. 2

This stereogram is made from the under-surface of a child's skull at the time of birth. The condyloid process is in close juxtaposition to the auditory process. The process is somewhat thicker than that shown in No. 1, card 83. The external tympanic membrane has been preserved, but has no bony protection at this period. These unprotected parts are often injured at the time of birth by the use of forceps. For some time after birth they should be guarded.

The figures indicate—



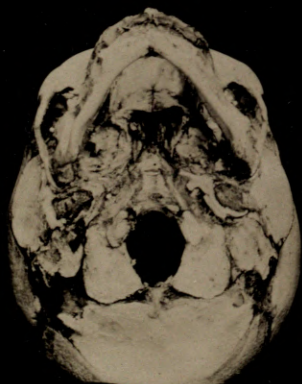
- 1—Mandible
- 2—Malar Bone
- 3—Zygomatic Arch
- 4—Greater Wing of Sphenoid Bone
- 5—Temporo-Mandibular Articulation
- 6—Squamous Portion of Temporal Bone
- 7—Auditory Ring
- 8—Mastoid Process
- 9—Fontanelle
- 10—Parietal Bone
- 11—Occipital Bone

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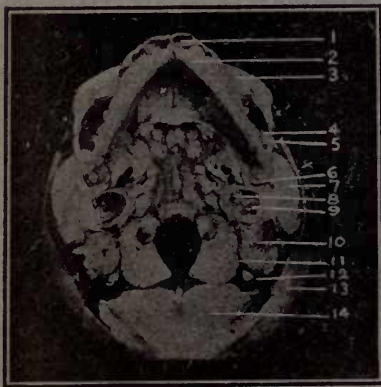
SECTION IX No. 22



DEVELOPMENT OF THE EXTERNAL AUDITORY CANAL No. 3

This Stereogram is made from the under-surface of a child's skull about four months old. The condyloid processes and the glenoid fossa are better developed than in stereogram No. 1, card 83, or No. 2, card 84, the auditory ring is better developed. The external tympanic membrane being removed from the left ear, the ear bones are plainly seen. The handle of the malleus, which originally was part of the same Cartilage-Meckel's—from which the mandible was formed is well shown. It also demonstrates the close relation of the mandible to the developing external auditory plate and canal.

The figures indicate—

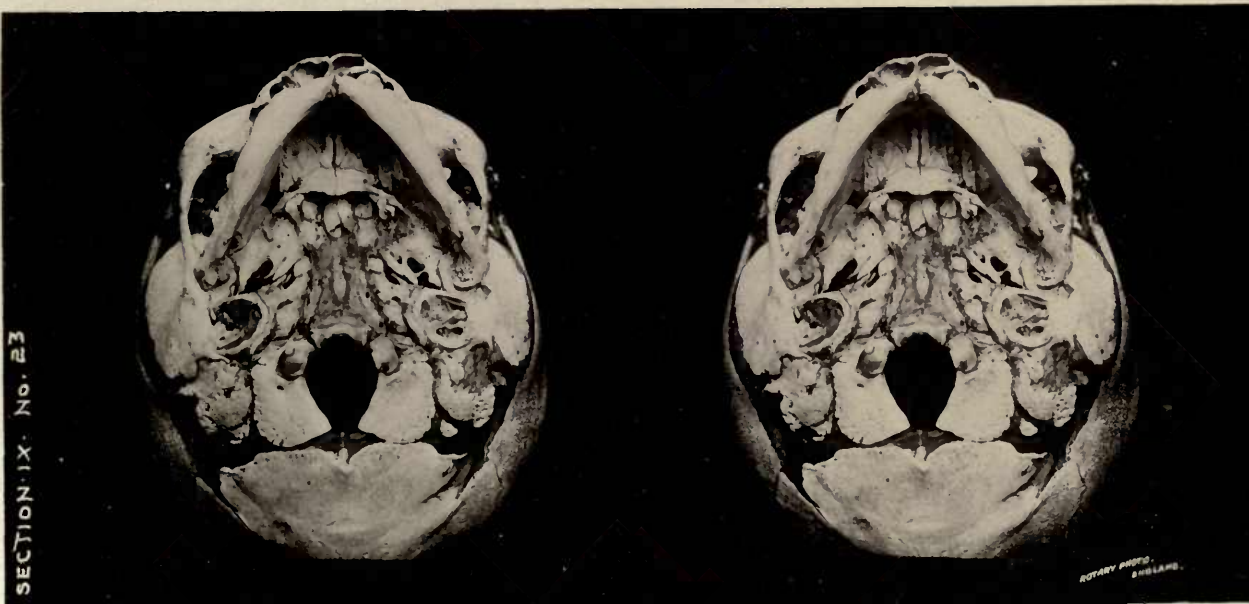


- 1—Maxilla
- 2—Mandible
- 3—Malar Bone
- 4—Greater Wing of Sphenoid Bone
- 5—Zygoma
- 6—Temporo Mandibular Articulation
- 7—Squamous Portion of Temporal Bone
- 8—Auditory Ring
- 9—Ear Ossicles
- 10—Mastoid Process
- 11—Jugular Process of Occipital Bone
- 12—Fontanelle
- 13—Parietal Bone
- 14—Ascending Portion of Occipital Bone

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FRONTAL SINUS

NOTE

The frontal sinus as described in the text-books is familiar to all, but those who have made a special study of this region, know that this description does not cover the field. The frontal sinus is of almost infinite variety. It not only varies in different individuals, but in the same person one side may differ entirely from the other. There are skulls in which no frontal sinuses exist, and there are others in which there is but one. In the latter event, the sinus may be very small, or it may extend from one of the external angular processes far over the median line of the frontal bone and upward to a point above the level of the frontal eminences, or backward over the orbit nearly to the optic nerve.

FRONTAL SINUS No. 1

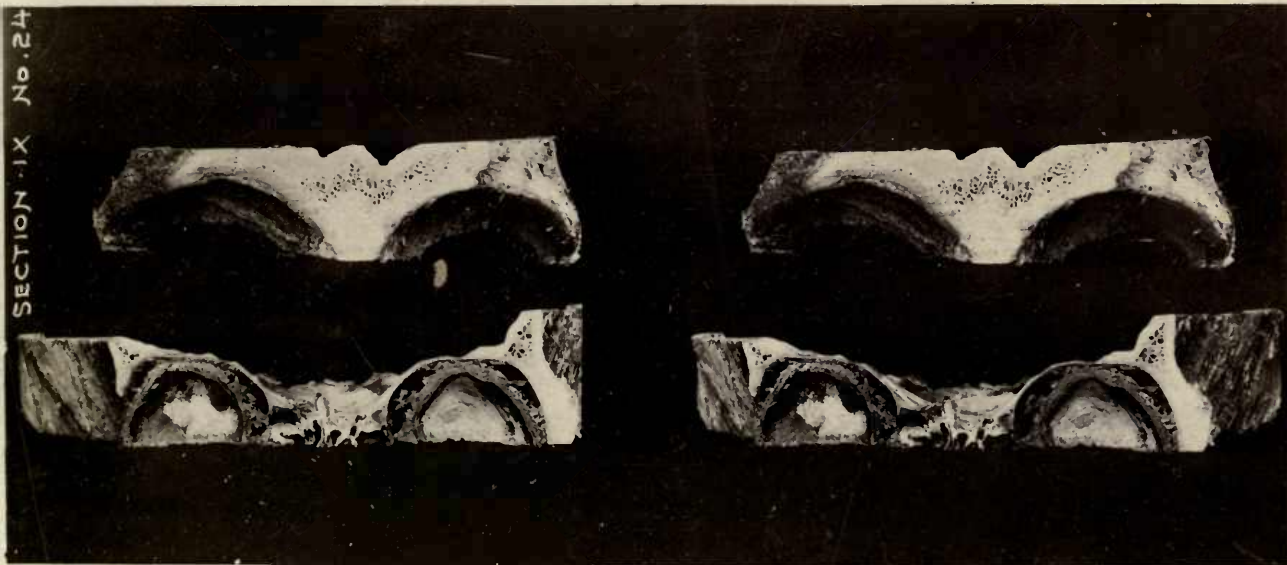
Two vertical transverse bilateral sections through the supra-orbital region of the skull. The upper figure shows that the anterior portion of the frontal bone has been removed from the superciliary ridges exhibiting no indication of a sinus in the ascending portion of the frontal bone. The lower picture shows evidence of the sinuses passing into the horizontal portion over the orbit.

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 4207
 XI. NO. 24
 SECTIONS


FRONTAL SINUS No. 2

The anterior walls in the region of the sinuses are removed, exposing a single frontal sinus,—the right,—which extends unbroken far over to the left side. This sinus extends backward partly over the orbit and has but one outlet. Originally it is possible that there were two sinuses in this case, but through pathological conditions the septum has been absorbed and the left opening into the nasal chamber has become closed.

The figures indicate—



- 1—Frontal Sinus
- 2—Incomplete Septum
- 3—Ostium Frontale
- 4—Optic Foramen
- 5—Sphenoidal Fissure
- 6—Greater Wing of Sphenoid Bone
- 7—Lachrymal Bone
- 8—Nasal Duct
- 9—Sphenomaxillary Fissure

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FRONTAL SINUS No. 3

The anterior walls of the frontal sinuses are removed, showing two rather typical sinuses which have two outlets and a complete septum near the median line. There is also a partial septum on each side, forming two pockets near the external angular process. The right sinus measures horizontally 35 m.m.; the left 30 m.m.; the depth of the right sinus is 42 m.m. and the left 35 m.m.

The figures indicate—



- 1—Frontal Sinus
- 2—Complete Median Septum
- 3—Incomplete Septum

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SECTION IX. No. 26

FRONTAL SINUS No. 4

The anterior walls of the sinuses have been removed, exposing three complete sinuses which have three individual outlets and two complete septa. The two lateral sinuses pass backward well over the orbits.

The figures indicate—



- 1—Left Frontal Sinus
- 2—Median Septum
- 3—Right Median Frontal Sinus
- 4—Right Lateral Frontal Sinus
- 5—Nasal Duct
- 6—Infraorbital Canal

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FRONTAL SINUS No. 5

The anterior portion of the face has been removed, exposing four frontal sinuses with four independent outlets and three complete septa, the nasal chamber, the maxillary sinus, etc.

Some writers prefer calling the two middle sinuses anterior ethmoidal cells invading the frontal bone.

The figures indicate—



- 1—Frontal Sinus
- 2—Frontal Sinus or Ethmoid Cells
- 3—Infraorbital Canal

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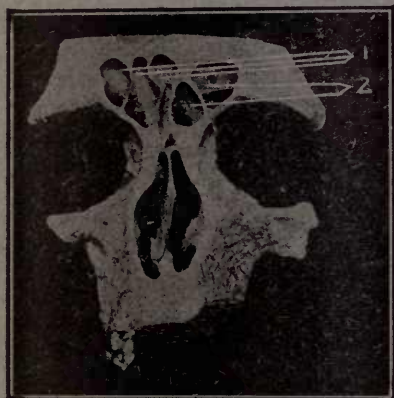


SECTION IX No. 28

FRONTAL SINUS No. 6

The anterior portion of the face is removed, exposing five frontal sinuses with four complete septa. Four of the sinuses extend upward to about an equal height.

The figures indicate—



- 1—Three Right Frontal Sinuses
2—Two Left Frontal Sinuses

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SECTION IX No.29

ROTARY PHOTO
ENGLAND

FRONTAL SINUS No. 7

The anterior wall of the frontal sinus is removed, exposing two frontal sinuses of unequal size and shape, with septum nearly in the median line but somewhat curved in its formation. On the right side there is apparently an enlarged ethmoidal cell pushed or "blown up" into the frontal sinus. This cell or pocket has its independent outlet into the hiatus semilunaris. In the left frontal sinus there is a large balloon-shaped cell partly divided by an incomplete septum; it has two outlets into the region of the anterior ethmoidal cells.

The figures indicate—



- 1—Septum of Sinuses
- 2—Frontal Sinus
- 3—Balloon Shaped Cell (Ethmoidal)
- 4—Outlet of Frontal Sinus

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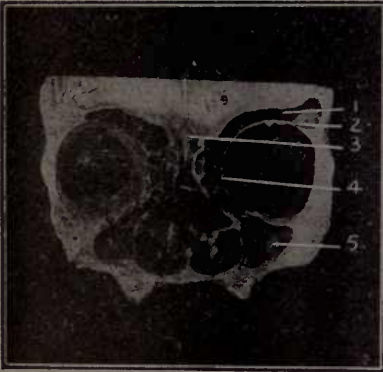
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FRONTAL SINUS No. 8

Posterior view of a vertical transverse bilateral section of the face, showing a specimen that has two large frontal sinuses with a complete septum. The right sinus extends back over the orbit and down through the region of the anterior ethmoidal cells, continuing into the maxillary sinus, thus making one common cavity of the frontal sinus, anterior ethmoidal cells, and the maxillary sinus. The rim of bone surrounding the orbit for two-thirds of the way is thin and shell-like.

The figures indicate—



- 1—Large Frontal Sinus
- 2—Rim of Orbit
- 3—Crista Galli
- 4— { Direct Communication Between Frontal
and Maxillary Sinuses
- 5—Maxillary Sinus

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FRONTAL SINUS No. 9

The anterior walls of the frontal bone have been removed, showing two large frontal sinuses. From the appearance of the picture there are three sinuses, but the septum on the right side is incomplete, making but one sinus on that side; consequently the right sinus is very large and extends from the right angular process transversely to the left of the median line, measuring 65 m.m., over all. Its depth from the top to the outlet is 45 m.m., and it extends well back over the orbit 44 m.m. The left sinus extends outward to the external angular process and backward to about one-half the distance of that on the right side.

The figures indicate—



- 1—Median Frontal Sinus
- 2—Right Lateral Frontal Sinus
- 3—Incomplete Septum
- 4—Left Lateral Frontal Sinus
- 5—Sphenoidal Fissure
- 6—Spheno-Maxillary Fissure
- 7—Dento-Alveolar Abscess

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FRONTAL SINUS No. 10

Horizontal section made above the orbits, showing transverse section of a large left frontal sinus measuring 76 m.m. from the left external angular process to a portion over the centre of the right orbit, without a septum. The right frontal sinus measures 40 m.m. and has several small, incomplete nearly horizontal septi, making a number of horizontal pockets.

The figures indicate—



- 1—Left Frontal Sinus Extending to Right
- 2— } Right Frontal Sinus with
 } Horizontal Septa
- 3—Anterior Fossa of Skull
- 4—Sella Turcica
- 5—Middle Fossa of Skull

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ROBERT PHOTO
ENGLAND

FRONTAL SINUS No. 11

An anterior view of two sinuses. That on the right is extremely large extending from the right external angular process over toward the left and measures 67 m.m., leaving but a slight space for the left frontal sinus which measures about 15 m.m. The septum between these sinuses has an inclination of about 45° . The right sinus also extends well back over the orbit and into the crista galli.

The figures indicate—



- 1—Large Right Frontal Sinus
- 2—Incomplete Septum
- 3—Small Left Frontal Sinus
- 4—Complete Septum

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SECTION IX No. 34

FRONTAL SINUS No. 12

An anterior view of two very large frontal sinuses, which extend backward over the orbit, where they are divided by several incomplete septa. They also extend downward as indicated by the wires and communicate directly with the maxillary sinuses. The right and left each measure horizontally 50 m.m., and their depth is 40 m.m. (See vertical transverse bilateral sections Nos. 9 and 10—Cards Nos. 71 and 72.)

The figures indicate—



- 1—Frontal Sinus with Septa
 2— { Wire Passing from Frontal Sinus
 into Maxillary Sinus

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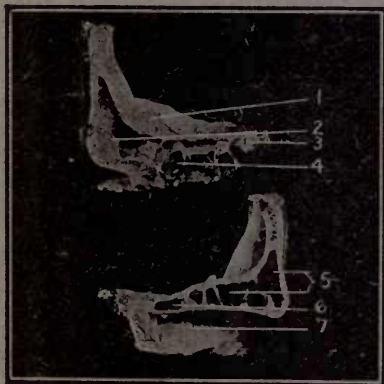
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FRONTAL SINUS No. 13

Made from two specimens showing lateral views of the frontal sinuses. The lower picture is a sagittal section cut near the center of the orbit, showing the anterior portion, the sinus divided into five pockets all of which have one common outlet. The sixth or posterior cell communicates with the upper meatus of the nose. The upper picture is also a sagittal section cut to the median line of the osplanum of the ethmoid bone. It shows a frontal sinus extending backward nearly to the optic nerve, which is seen in the optic foramen, and passing over the orbit; it also is divided into several pockets, and below it are seen various ethmoidal cells.

The figures indicate—



- 1—Crista Galli
- 2—Left Frontal Sinus
- 3—Optic Nerve in Optic Foramen or Canal
- 4—Ethmoidal Cells
- 5—Right Frontal Sinus with Septa
- 6—Posterior Ethmoid Cell
- 7—Orbit

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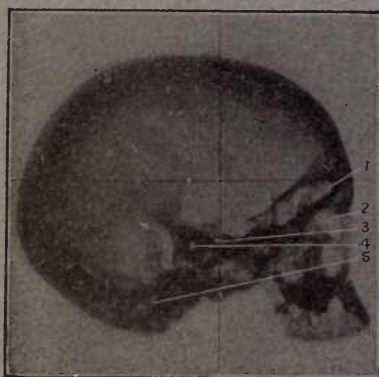


STEREOSCOPIC RADIOGRAM No. 2

THE ORIGINAL RADIOGRAM WAS MADE BY DR. WILLIAM S. HOUGHTON, OF DUBLIN

This stereoscopic radiogram is made from a cleaned dried skull. The teeth and their pulp cavities and their relative positions being clearly indicated. The upper third molars are impacted and rest on a line with the roof of the mouth. The region of the maxillary sinus is well shown. The floor and the boundaries of the orbit, its external wall and the frontal sinuses can be seen. The boundaries of the fossae of the brain-case are well shown, the free edges of the lesser wing of the sphenoid bone and the petrous portion of the temporal bone are markedly brought out. In looking through the skull to the opposite side of the brain-case, the sutures are seen; also the grooves for the meningeal arteries. Above the body of the sphenoid the sella turcica is seen, and the sphenoidal sinuses are also shown with the posterior ethmoid cells in front of them. Within the petrous portion of the temporal bone the internal auditory meatus shows plainly, and back of the petrous portion is the deep groove for the lateral sinus.

The figures indicate—



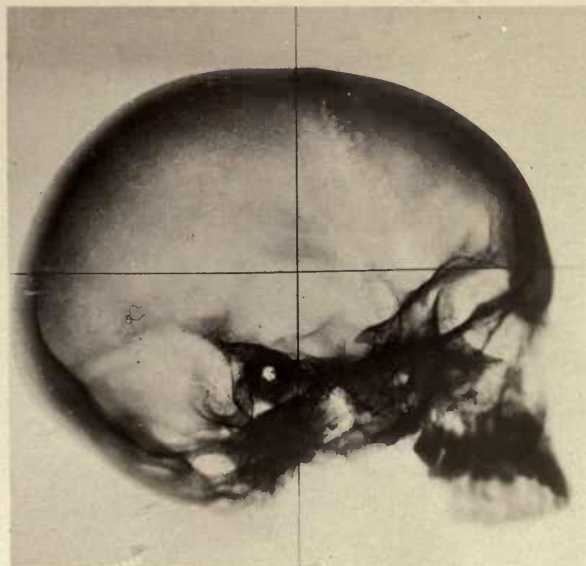
- 1—Frontal Sinus
- 2—Ethmoid Cells
- 3—Internal Auditory Canal of Left Side
- 4—External Auditory Canal of Right Side
- 5—Lateral Venous Sinus

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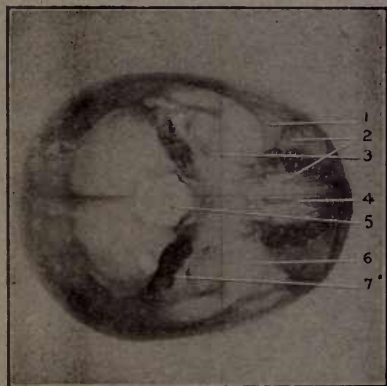
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STEREOSCOPIC RADIOGRAM No. 3

THE ORIGINAL RADIOGRAM WAS MADE BY DR. WILLIAM S. HOUGHTON, OF DUBLIN

A vertical X-ray picture looking down through a dried skull. The foramen magnum is seen at the bottom with two cerebella fossae of the occipital bone posteriorly. The internal occipital ridge is seen extending upward to the trochlear-Herophili. From this center the grooves for the lateral sinuses extend outward and downward to the jugular fossae. In front of the foramen magnum are seen the anterior condyloid foramina. Above which and laterally are seen the petrous portions of the temporal bones with their various cells. The position of the semi-circular canals and the cochlae are shown. The mastoid cells are well defined. Anterior to the petrous portion of the temporal bones are the middle lacerated foramina; the foramina spinosa are seen just in front. Passing forward and upward from the basilar process of the occipital bone to the body of the sphenoid, the sphenoidal sinuses are shown. Continuing forward the septum of the nose with its two plates are seen and on the left side of the septum near the anterior palatine canal will be seen a small "spur". The roof of the mouth is shown and above it the turbinate scrolls are in view. Above the teeth the maxillary sinuses are fairly well shown.

The figures indicate—

- 1—Lesser Wing of Sphenoid
- 2—Maxillary Sinus
- 3—Foramen Spinosum
- 4—Septum of Nose with Spine
- 5—Foramen Magnum
- 6—Middle Fossa of the Brain Case
- 7—Petrous Portion of Temporal Bone

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SECTION IX No. 38

